

Claims

1. Liquid separator for a gas analyzer, comprising an input passage having an input end and an output end, an output passage having an input end and an output end, a wall formed of a gas permeable and liquid impermeable material separating the input passage and the output passage, means for introducing a gas sample containing liquid through the input end into the input passage with a first portion of the gas passing through said wall to the output passage and a second portion of the gas and the liquid remaining in the input passage, a vacuum means for flowing the first portion of the gas through the output end from the output passage to a measuring unit, a first conduit connecting the output end of the input passage for conducting the second portion of the gas and the liquid furtheron with vacuum means, the output passage being arranged to widen towards the output end of the output passage.
2. The liquid separator of claim 1 wherein the widened portion of the output passage extends over at least about half of the output passage length.
3. The liquid separator of claim 1 or 2 wherein the output end of the input passage is arranged to narrow towards the output end of the input passage.
4. The liquid separator of claim 3 wherein the narrowed portion of the input passage extends over at least about half of the input passage length.
5. The liquid separator of claim 1 and 3 or 4 wherein the profiles of the input and output passages are formed by positioning said wall separating the input and output passages in an angular position with respect to the longitudinal directions of the input and output passages.
6. The liquid separator of claims 1 or 5 wherein the vacuum means is connected to the output end of the output passage by using a conduit connected without bends to the output end of the output passage.
7. The liquid separator of claims 1 and 3 or 4 wherein the input passage and the output passage are concentric tubular passages separated from each other by a tubular and conical wall formed of a gas permeable and liquid impermeable material, the conical form narrowing toward the output ends of the passages.
8. The liquid separator of claim 1 wherein the widening angle of the output passage is between the values 30 degrees and 0.5 degrees, preferably less than 20 degrees and more than 3 degrees.

9. The liquid separator of claim 1 wherein the liquid separator comprises a liquid receiving means, which is connected to the output end of the input passage for conducting the second portion of the gas and the liquid to the liquid receiving means.

5 10. Liquid separator for a gas analyzer, comprising an input passage having an input end and an output end, an output passage having an input end and an output end, a wall formed of a gas permeable and liquid impermeable material separating the input passage and the output passage, means for introducing a gas sample containing liquid through the input end into
10 the input passage with a first portion of the gas passing through said wall to the output passage and a second portion of the gas and the liquid remaining in the input passage, a vacuum means for flowing the first portion of the gas through the output end from the output passage to a measuring unit, a first conduit connecting the output end of the input passage and for conducting the second portion
15 of the gas and the liquid further on with vacuum means, the input passage being arranged to narrow towards the output end of the input passage.

11. The liquid separator of claim 10 wherein the narrowed portion of the input passage extends over at least about half of the input passage length.

20 12. The liquid separator of claim 10 wherein the narrowing angle of the input passage is between the values 30 degrees and 0.5 degrees, preferably less than 20 degrees and more than 3 degrees.

13. The liquid separator of claim 10 wherein the liquid separator comprises a liquid receiving means, which is connected to the output end of the input passage for conducting the second portion of the gas and the liquid
25 to the liquid receiving means.

14. Method for separating a liquid component from gas to be delivered to a gas analyzer in which method the gas is divided into two components by using an input passage having an input end and an output end, and an output passage having an input end and an output end, a gas permeable and liquid impermeable wall separating said two passages so that one part of the gas
30 flows from the input passage through the wall to the output passage which is in flow connection with a gas analyzer and the other part of the gas, as well as the liquid component possibly entrapped in the gas is remained in the input passage and carried away past the gas analyzer, the profile of the gas velocity
35 along the end of the output passage and the profile of the gas velocity along

the corresponding end of the input passage are arranged to be approximately similar.

15. The method of claim 14 wherein the profile of the gas velocity along the input end of the output passage is arranged to be approximately similar to the profile of the gas velocity along the input end of the input passage.

16. The method of claim 14 wherein the profile of the gas velocity along the output end of the input passage is arranged to be approximately similar to the profile of the gas velocity along the output end of the output passage.